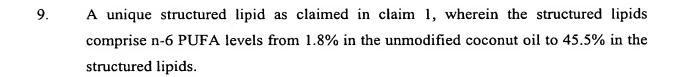
5.

## **CLAIMS:**

- 1. Unique structured lipids obtained from interesterfying coconut oil with free fatty acids obtained from hydrolysis of triglycerides of a vegetable source, said structured lipids contain up to 46mol % of omega 6 polyunsaturated fatty acids and rich in medium chain fatty acids.
- 2. Unique structured lipids as claimed in claim 1, wherein the structured lipids comprise lauric acid that-produces quick energy-for-critically ill patients.
- 3. Unique structured lipids as claimed in claim 1, wherein the structured lipids are rich in MCFA (Medium Chain Fatty Acid) and n-6 PUFA (Polyunsaturated fatty acid), which is nutritionally beneficial—in being hypocholesterolemic and hypotriglyceridemic.
- 4. A unique structured lipid as claimed in claim 1, wherein the structured lipids having cholesterol-lowering capacity-in-the range of 10-36%.
  - A unique structured lipid as claimed in claim1, wherein the recovery of scale up of structured lipids is in the range of 88-92%
  - Unique structured lipids as claimed in claim 1, wherein the structured lipids comprise n-6 PUFA to modulate-eicosanoid production in immune compromised patients.
- 7. A unique structured lipid as claimed in claim 1, wherein the structured lipids are having a very low melting point 12-15°C that remains as a liquid without phase separation (a)
- √ 8. A unique structured lipids as claimed in claim 1, wherein the structured lipids are having a safflower oil fatty acids and triaglycerols of coconut oil for optimal nutrition.



- A unique structured lipids as claimed in claim 1, wherein the serum and cholesterol lowering capacity of the lipids in mammals is 10% and 36% respectively.
  - 11. A process for production of cholesterol lowering structured lipids from cod liver oil rich in omega 6 polyunsaturated fatty acids (omega 6 PUFA), said process comprising;
    - (a) hydrolyzing triglycerides of vegetable oil source by known method to obtain free fatty acids rich in omega 6 PUFA;
    - (b) interesterifying coconut oil with the free fatty acids obtained from step(a) at a preferable molar ratio of 1:3 molar ratio;
    - (c) incubating with immobilized immobilized sn-1-3 lipase at a temperature range of 37-55°C for a period of 6-48 hours using a solvent for enzymatic acidolysis thereby incorporating the required acyl groups into specific positions of the triacylglycerols;
    - (d) separating the reaction products using adsorption chromatography using solvents selected from ethers, hexane and optionally with 1 part of acetic acid to obtain the structured lipids; and
    - (e) recovering the structured lipids by scaling up in the range of 88-92%.
  - 12. A process as claimed in claim 11, wherein the triglycerides are selected from a natural sources namely coconut oil.
  - 13. A process as claimed in claim 11, wherein the fatty acids are selected from a vegetable source of safflower oil.
  - 14. A process as claimed in claim 11, wherein the ethers are selected from group comprising petroleum ether, diethyl ether.

- 15. A process as claimed in claim 11, the solvent is selected from petroleum ether, dioxane, isooctane, n- hexane, toluene.
- 16. A process as claimed in claim11, wherein the ratio of ethers:hexane used is the range of 85:5 to 95:5.
- 17. A process as claimed in claim 11, wherein the interesterification is carried out using lipase enzyme at 5-10%(w/w) of the substrates.
- 18. A process as claimed in claim 11, wherein the immobilized lipase is obtained using *Rhizomucor meihei*.
- 19. A process as claimed in claim 11, wherein an immobilized lipase obtained from *Rhizomucor meihei* can be used up to 25 cycles without loss of activity, thus ensuring economic viability.